

The Fifth Dimension: Legal Infrastructure, Cracks, and Governance

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I. FIVE DIMENSIONS

The notice for this symposium provided that “[f]irst, we do not have the legal, institutional, or physical infrastructure to transition to cleaner energy sources.”¹ There is a twist to this: First, we do have a multidimensional state legal infrastructure undertaking this, but it is being challenged as unconstitutional or otherwise illegal. We have not always had legally strategic implementation of energy infrastructure. This Article describes which initiatives states have adopted for sustainable energy promotion and what legal trip-wires they are encountering.

Second, the conference design also declares that “we do not have effective governance strategies for complex, multi-level problems that predominate at the intersection of environmental and energy law.”² At this intersection is electric power. More than one-third of CO₂ emissions are attributable to the electric power sector.³ Ninety-eight percent of anthropogenic CO₂ emissions are from combustion of fossil fuels.⁴ Fossil fuel generation results in 64% of total human-made atmospheric CO₂,⁵ and the International Energy Agency forecasts that by 2030, world demand for energy will grow by 60%,⁶ with fossil fuel sources supplying 82% of the total⁷ and noncarbon renewable energy sources supplying only 6%.⁸ At current rates of energy development, energy-related CO₂

1. See *Conference Themes: Legal & Policy Pathways for Energy Innovation*, U. MINN., CONSORTIUM ON L. & VALUES HEALTH, ENV'T & LIFE SCI., <http://consortium.umn.edu/lecturesconferences/conferences/lppei/themes/home.html> (last visited Oct. 5, 2013) [hereinafter *Conference Themes*].

2. *Id.*

3. See U.S. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, EMISSION OF GREENHOUSE GASES IN THE UNITED STATES 2005, at 16 (2006), available at <http://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/ggrpt/057305.pdf>.

4. U.S. ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASES IN THE UNITED STATES 1998, at 13 (1999), available at <http://www.eia.gov/environment/archive/057398.pdf>.

5. See *Frequently Asked Global Change Questions*, CARBON DIOXIDE INFO. ANALYSIS CENTER, <http://cdiac.ornl.gov/faq.html> (last visited Oct. 25, 2013).

6. See INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2004, at 57 (2004).

7. *Id.*

8. *Id.* at 34.

emissions in 2050 would be 250% of their current levels under the existent pattern.⁹

There is a substantial need for sustainable electric power development. It is the key infrastructure to determine the future carbon footprint. And the current sustainable energy policy of the United States is largely implemented at the state, rather than federal, level of government. Several of these state policies are confronting Supremacy and dormant Commerce Clause constitutional challenges. This Article charts the nature of these challenges and their legal and policy significance.

Third, the conference design notes: “Many of our most daunting environmental and energy challenges cross jurisdictional boundaries, involve multiple levels of governance (e.g., local, state, regional, national, international), or both. Natural systems do not respect the artificial territorial and jurisdictional boundaries of governments, whether at the local, state, or national levels”¹⁰ The constitutional doctrines above do not respect state boundaries, prevent states from discriminating in their regulation based on the place of origin of electric power and commerce, and constrain state regulation of the expanding interstate wholesale power market.

Finally, the symposium design notes that “[w]ith no single institution well-positioned to solve the problem, it may simply fall between the cracks; or it may be addressed partially and inadequately by one or more well-intentioned institutional actors”¹¹ The legal institutional “cracks” are significant—and this symposium Article works in the Fifth Dimension. Some will remember that the Fifth Dimension was a music group, famous for hit songs such as *Aquarius/Let the Sunshine In*.¹² I suppose that this song about letting the sunshine in

9. INT’L ENERGY AGENCY, ENERGY TECHNOLOGY PERSPECTIVES: SCENARIOS AND STRATEGIES TO 2050, at 25 (2006), available at <http://www.oecd-ilibrary.org/docserver/download/6106201e.pdf?expires=1384129338&id=id&accname=ocid195223&checksum=2FB3960ABB42D0D37E970E8D23FA2806> (“In the Baseline Scenario for this study, CO₂ emissions will be almost two and a half times the current level by 2050.”).

10. *Conference Themes*, *supra* note 1.

11. *Id.*

12. Their hits include *Aquarius/Let the Sunshine In* and *Wedding Bell Blues*, on THE AGE OF AQUARIUS (Soul City Records 1969); *(Last Night) I Didn’t Get to Sleep at All*, on INDIVIDUALLY & COLLECTIVELY (Bell Records 1972); *The Magic Garden*, on THE MAGIC GARDEN (Soul City Records 1967); *One Less Bell to Answer*, on PORTRAIT (Bell Records 1970); *Stoned Soul Picnic*,

could be an appropriate embarkation point for a discussion that includes renewable power. Nonetheless, for my purposes here, the Five Dimensions are:

- The First Dimension: Basic state governance powers on power; the Supremacy Clause affecting feed-in tariffs and net metering;
- The Second Dimension: Do power unto others . . . ; The dormant Commerce Clause applied to renewable portfolio standards and state benefit charges;
- The Third Dimension: The First and Second Dimensions combined on energy;
- The Fourth Dimension: State power regarding transmission rights of first refusal; and
- The Fifth Dimension: Beyond power to climate issues.

The next sections of this Article take us into the Five Dimensions of U.S. federal and state sustainable energy policy and through the legal cracks in its infrastructure and governance. States have sculpted sustainable energy policy around five dimensions of legal and policy initiatives:

- Net metering: In 86% of states;¹³
- Renewable portfolio standards: In 58% of states;¹⁴
- Renewable system benefit charges: In 30% of states;¹⁵
- Carbon and greenhouse gas (GHG) regulation: In 24% of states;¹⁶
- Feed-in tariffs: In 14% of states.¹⁷

on STONED SOUL PICNIC (Soul City Records 1968); *Up, Up and Away, on UP, UP AND AWAY* (Soul City Records 1967). *Aquarius/Let the Sunshine In* was featured in the movie FORREST GUMP (Paramount Pictures 1994) and was ranked at #57 on *Billboard's* "Greatest Songs of All Time" and at #33 on the 2004 AFI's "100 Years of Songs."

13. *Net Metering*, DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/documents/summarymaps/net_metering_map.pdf (last visited Oct. 20, 2013).

14. *Renewable Portfolio Standards*, ENVTL. PROTECTION AGENCY, <http://www.epa.gov/agstar/tools/funding/renewable.html> (last updated Sept. 27, 2012).

15. Database of State Incentives for Renewables & Efficiency, Public Benefits Funds for Renewables, PowerPoint Presentation 1 (2013) [hereinafter Public Benefit Funds], available at http://www.dsireusa.org/documents/summarymaps/PBF_Map.pptx.

16. *Energy Regulation in the States: A Wake-up Call*, INST. FOR ENERGY RES., 6, <http://www.instituteforenergyresearch.org/pdf/statereport.pdf> (last visited Oct. 23, 2013).

Through each of the sustainable policies above, higher charges are levied in retail utility bills, which have been cause for ongoing litigation. One of these five state initiatives was stricken at the trial level as unconstitutional,¹⁸ reversed by a split panel on appeal and now subject to a request for rehearing en banc.¹⁹ Others were stated to be unconstitutional in the method that some states have implemented them,²⁰ and a recent federal adjudicatory order casts legal uncertainty on another of these five initiatives.²¹ Next, into the First Dimension.

II. THE FIRST DIMENSION: HARD, 'BRIGHT' LINES FOR BASIC GOVERNANCE POWERS ON POWER

A. FEED-IN TARIFFS

Feed-in tariffs (FiTs) are regulatory requirements imposed by some states on their regulated utilities to purchase certain designated types of independent power generation on a wholesale basis, typically from renewable resources or combined heat and power (CHP) units, at prices well in excess of the market value of wholesale power.²² The regulated utilities are directed by law and regulation to "buy high" on wholesale in terms of other electric power available in the market.²³

17. *Feed-In Tariffs and Similar Programs*, U.S. ENERGY INFO. ADMIN., http://www.eia.gov/electricity/policies/provider_programs.cfm (last updated June 4, 2013).

18. *Rocky Mountain Farmers Union v. Goldstone*, 843 F. Supp. 2d 1071, 1099 (E.D. Cal. 2011).

19. *Rocky Mountainin Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

20. *Ill. Commerce Comm'n v. Fed. Energy Regulatory Comm'n*, 721 F.3d 764 (7th Cir. 2013); *Petition for Writ of Certiorari, Schuette v. FERC*, No. 13-443 (Oct. 7, 2013); see also Ann Carlson, *Court Casts Doubt on Constitutionality of Michigan's Renewable Portfolio Standard, Upholds Cost Sharing for Transmission Lines*, LEGALPLANET (June 11, 2013), <http://legal-planet.org/2013/06/11/court-strikes-down-michigans-renewable-portfolio-standard-as-unconstitutional-upholds-cost-sharing-for-transmission-lines>.

21. See *Cal. Pub. Utils. Comm'n*, 132 FERC ¶ 61,047, ¶¶ 61,337–61,338 (2010).

22. See NAT'L RURAL ELECTRIC COOP. ASS'N, *FEED-IN TARIFFS 1* (2013), available at http://www.nreca.coop/wp-content/uploads/2013/07/FeedInTariffs_WhitePaper.pdf.

23. See *id.* at 1–2. Electric power in the Northeast has been available at an average price during the past years of \$0.05/kilowatt hour (kWh) or less.

Sections 205 and 206 of the Federal Power Act (FPA)²⁴ empower the Federal Energy Regulatory Commission (FERC) exclusively to regulate rates for the interstate and wholesale sale and transmission of electricity.²⁵ The U.S. Supreme Court held that Congress meant to draw a “bright line,” easily ascertained and not requiring case-by-case analysis, between state and federal jurisdiction.²⁶ When a transaction is subject to exclusive FERC jurisdiction and regulation, state regulation is preempted as a matter of federal law and the U.S. Constitution’s Supremacy Clause, according to a long-standing and consistent line of rulings by the U.S. Supreme Court.²⁷ The FERC has “exclusive authority to regulate the transmission and sale at wholesale of electric energy in interstate commerce”²⁸ If states impose a rate in excess of avoided cost (the wholesale value of power in the market) by either “law

See Conway Irwin, *Phasing Out the PTC as Wind Nears Grid Parity*, BREAKING ENERGY (Oct. 16, 2013, 2:00 PM), <http://breakingenergy.com/2013/10/16/phasing-out-the-ptc-as-wind-nears-grid-parity/>. The Vermont feed-in tariffs for power of this value were set for wind of less than 15 kW at \$0.20/kWh, for wind more than 15 kW at \$0.125/kWh, and for solar generation at \$0.30/kWh. LOLA INFANTE ET AL., EDISON ELEC. INST., FEED-IN TARIFFS IN EUROPE AND THE UNITED STATES 39 (2009), available at <http://www3.eei.org/meetings/Meeting%20Documents/2010-03-15-rrac-FITs-background-paper.pdf>.

24. 16 U.S.C. §§ 824d–824e (2012).

25. See Pub. Util. Dist. No. 1 of Snohomish Cnty. Wash. v. FERC, 471 F.3d 1053, 1058 (9th Cir. 2006), *vacated*, 547 F.3d 1081 (9th Cir. 2008).

26. Fed. Power Comm’n v. S. Cal. Edison Co., 376 U.S. 205, 215–16 (1964).

27. See Entergy La., Inc. v. La. Pub. Serv. Comm’n, 539 U.S. 39, 47 (2003); Miss. Power & Light Co. v. Mississippi *ex rel.* Moore, 487 U.S. 354, 374 (1988); Nantahala Power & Light Co. v. Thornburg, 476 U.S. 953, 963–66 (1986); Montana-Dakota Utils. Co. v. Nw. Pub. Serv. Comm’n, 341 U.S. 246, 251 (1951). The Supreme Court overturned an order of the New Hampshire Public Utilities Commission that restrained within the state, for the financial advantage of in-state ratepayers, low-cost hydroelectric energy produced within the state. New Eng. Power Co. v. New Hampshire, 455 U.S. 331, 344 (1982). It held this to be an impermissible violation of Article 1, Section 8, Clause 3 of the dormant Commerce Clause and the FPA: “Our cases consistently have held that the Commerce Clause of the Constitution . . . precludes a state from mandating that its residents be given a preferred right of access, over out-of-state consumers, to natural resources located within its borders or to the products derived therefrom.” *Id.* at 338.

28. *New Eng. Power Co.*, 455 U.S. at 340.

or policy,” the “contracts will be considered to be void *ab initio*.”²⁹

Several states moved to decouple the amount of revenue earned by a regulated utility from lock-step with the amount of power it can produce and sell.³⁰ Such *retail* reward is entirely within state authority. Decoupling of electric utility rates, as of 2013, had been approved in some form in fourteen states.³¹ California, New York, New Jersey, Maryland, and Massachusetts are the five states leading decoupling.³² These

29. Conn. Light & Power Co., 70 FERC ¶ 61,012, ¶¶ 61,029–61,030 (1995). For a case where states did not have authority to lower wholesale renewable power sale rates, see *Indep. Energy Producers Ass’n v. Cal. Pub. Utils. Comm’n*, 36 F.3d 848 (9th Cir. 1994); *S. Cal. Edison Co.*, 70 FERC ¶ 61,215, ¶¶ 61,677–61,679 (1995).

30. See, e.g., INNOVATION ELEC. EFFICIENCY, STATE ELECTRIC EFFICIENCY REGULATORY FRAMEWORKS 1 (2013), available at http://www.edisonfoundation.net/iee/Documents/IEE_StateRegulatoryFrame_0713.pdf. The names used for decoupling vary, including “Billing Determinant Adjustment,” “Volume Balancing Adjustment,” and “Bill Stabilization Rider.” See Pamela G. Lesh & Dylan Sullivan, *Rate Impacts and Key Design Elements of Gas and Electric Utility Decoupling: A Comprehensive View*, NATURAL RES. DEF. COUNCIL, http://aceee.org/files/pdf/conferences/eer/2009/1D_Sullivan_Lesh.pdf (last visited Oct. 7, 2013).

31. See INNOVATION ELEC. EFFICIENCY, *supra* note 30, at 5. Most of these states had adopted lost revenue recovery provisions to make regulated utilities “whole” for pursuing lower sales volume in favor of greater energy efficiency. In 2007, California implemented a risk-reward incentive mechanism (RRIM) in conjunction with its four largest utilities whereby utilities receive “rewards” if they meet specific energy efficiency goals. TOM ROBERTS, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON., CALIFORNIA’S SHAREHOLDER INCENTIVE MECHANISM: A RATEPAYER PERSPECTIVE 4-76 (2009), available at http://aceee.org/files/proceedings/2009/data/papers/4_78.pdf. Under the RRIM, utilities are allowed to recover a percentage of the total net savings (savings minus costs) from energy efficiency if they achieved a minimum of 85% of the program goals. *Id.* at 4-80. In this program, utilities were also subject to a penalty if performance fell below 65% of goals. *Id.* Performance between 65% and 85% resulted in no penalties and no rewards. *Id.* The Massachusetts Department of Public Utilities issued an order that establishes a new base rate adjustment mechanism that decouples utility companies’ revenues from company electricity sales. Investigation by the Department of Public Utilities on its own Motion into Rate Structures That Will Promote Efficient Deployment of Demand Resources, Order No. 07-50-A, at 86–88 (Mass. D.P.U. July 16, 2008), available at http://www.env.state.ma.us/DPU_FileRoom/frmDocketListSP.aspx (search “Docket Number” for “07-50,” then open “Order” dated “July 16, 2008”).

32. See Cathy Cash, *Decoupling Mandate Keeps the Pot Stirred as Congress Advances Stimulus Package*, ELECTRIC UTIL. WK., Feb. 2, 2009, at 3 (noting that “[a]ccording to NRDC,” these five states “have adopted decoupling revenue mechanisms for both gas and electric utilities” while “[t]hirty-seven

are the states that led electric utility restructuring and retail deregulation in the late 1990s,³³ that led the development of renewable portfolio standards and renewable system benefit charges also in the late 1990s,³⁴ and led state carbon regulation in 2009.³⁵

The Supreme Court in 1986, and again in 1988, 2003, and 2008, reaffirmed and enforced exclusive federal jurisdiction pursuant to the Filed Rate Doctrine when states attempted to assert jurisdiction inconsistent with the FERC's exclusive authority over wholesale rate and term determinations.³⁶ California lost its case in 2010 when attempting to defend its state feed-in tariffs for renewable power.³⁷ A challenge by regional generators of power in the Mid-Atlantic states against New Jersey's in-state energy facility location preferences for new power generation resulted in changes in the FERC-approved regional PJM Independent System Operator procedures, and thereafter, now face pending constitutional challenges in federal court.³⁸

An increasing majority of U.S. power now proceeds through a wholesale power sale prior to its ultimate retail

states have taken no steps toward electric decoupling and [thirty-three] have not adopted decoupling for gas").

33. See STEVEN FERREY, *THE NEW RULES: A GUIDE TO ELECTRIC MARKET DEREGULATION* 135–57 (2000) [hereinafter *THE NEW RULES*] (describing deregulation of electricity retail markets, focusing on deregulation policy in California and Massachusetts); 2 STEVEN FERREY, *THE LAW OF INDEPENDENT POWER: DEVELOPMENT/COGENERATION/UTILITY REGULATION* §§ 10:6–10:12 (30th ed. 2013) [hereinafter 2 *INDEPENDENT POWER*].

34. See Steven Ferrey, *Sustainable Energy, Environmental Policy, and States' Rights: Discerning the Energy Future Through the Eye of the Dormant Commerce Clause*, 12 N.Y.U. ENVTL. L.J. 507, 645–71 (2004).

35. See Steven Ferrey, *Goblets of Fire: Potential Constitutional Impediments to the Regulation of Global Warming*, 35 *ECOLOGY L.Q.* 835, 843, 845–46 (2008).

36. See *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 963 (1986) (holding that the Filed Rate Doctrine limitations also apply “to decisions of state courts”); see also *Morgan Stanley Capital Grp., Inc. v. Pub. Util. Dist. No. 1 of Snohomish Cnty.*, 554 U.S. 527, 531 (2008); *Entergy La., Inc. v. La. Pub. Serv. Comm’n*, 539 U.S. 39, 47 (2003); *Miss. Power & Light Co. v. Mississippi ex rel. Moore*, 487 U.S. 354, 372 (1988).

37. *Cal. Pub. Utils. Comm’n*, 132 FERC ¶ 61,047, ¶¶ 61,337–61,338 (2010).

38. See *PJM Interconnection, L.L.C.*, 135 FERC ¶ 61,022, ¶¶ 61,091, 61,093, *order clarified on reh’g* by 137 FERC ¶ 61,145 (2011).

disposition,³⁹ thereby fundamentally altering the legal analysis of what is and is not now constitutional for a state, as opposed to the federal government, to regulate.⁴⁰ A large number of independent renewable power generators now sell their power wholesale to redistributing utilities and others that thereafter resell that power to retail customers.⁴¹ A few states have tried to impose FiTs on utilities and their ratepayers for favored renewable power sales at wholesale to the utilities.⁴² There is a “bright line” legally prohibiting state regulation.⁴³

B. NET METERING

Net metering is the most utilized state incentive for renewable power nationwide, in place in more than 85% of U.S. states.⁴⁴ Net metering is an accounting concept typically applied to renewable sources of distributed power self-generated on the utility customer’s side of the retail utility meter.⁴⁵ Each of the forty-three state net metering programs is distinct.⁴⁶ There are differences as to allowable sizes of units,

39. See ELEC. ENERGY MKT. COMPETITION TASK FORCE, REPORT TO CONGRESS ON COMPETITION IN WHOLESALE AND RETAIL MARKETS FOR ELECTRIC ENERGY 10 (2006), available at <http://www.ferc.gov/legal/fed-sta/ene-pol-act/epact-final-rpt.pdf> (“In the 1970s, vertically integrated utility companies (investor-owned, municipal, or cooperative) controlled over 95 percent of the electric generation in the United States . . . [B]y 2004 electric utilities owned less than 60 percent of electric generating capacity. Increasingly, decisions affecting retail customers and electricity rates are split among federal, state, and new private, regional entities.”).

40. 1 STEVEN FERREY, THE LAW OF INDEPENDENT POWER: DEVELOPMENT/COGENERATION/UTILITY REGULATION §§ 5:26–5:28 (30th ed. 2013) [hereinafter 1 INDEPENDENT POWER]; see STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES AND EXPLANATIONS 460–61 (1997) [hereinafter FERREY, ENVIRONMENTAL LAW].

41. See FERREY, ENVIRONMENTAL LAW, *supra* note 40, at 461.

42. See JULIE TAYLOR, NAT’L ASS’N OF REGULATORY UTIL. COMM’RS, FEED-IN TARIFFS (FIT): FREQUENTLY ASKED QUESTIONS FOR STATE UTILITY COMMISSIONS 8–9 (2010), available at <http://www.naruc.org/Publications/NARUC%20Feed%20in%20Tariff%20FAQ.pdf>.

43. See *supra* note 26 and accompanying text.

44. See *Net Metering*, *supra* note 13.

45. See *Generating Your Own Electricity: Net Metering*, PUB. UTIL. COMM’N OHIO, <http://www.puco.ohio.gov/puco/index.cfm/consumerinformation/consumer-topics/generating-your-own-electricity-net-metering> (last visited Oct. 26, 2013).

46. See *Net Metering*, *supra* note 13; *Net Metering*, SOLAR ENERGY INDUS. ASS’N, <http://www.seia.org/policy/distributed-solar/net-metering> (last visited Oct. 26, 2013).

the vintage and longevity of credits, whether credits can be cashed out, eligible classes of customers, and eligible technologies.⁴⁷

When the customer purchases and uses electricity from the distribution company, the meter runs forward; when more electricity is produced from the facility than is consumed by the customer, the excess is sent to the electricity grid, running the meter in reverse direction and reversing the net accounting of power flow.⁴⁸ By turning the meter backwards, since only a single rate applies to a single meter, net metering effectively compensates the generator at the full retail rate (which includes approximately two-thirds of the retail bill that is attributable to transmission, distribution, and taxes⁴⁹) for transferring just the wholesale energy commodity—the power itself.⁵⁰ Accounting at the retail rate multiplies by several-fold the effective value or revenue earned from the wholesale power transaction of supplying wholesale power to the utility.⁵¹

In 2001, the FERC held that state net metering decisions were not preempted by federal law.⁵² In its order, the FERC

47. See, e.g., *Net Metering*, *supra* note 13.

48. See *Generating Your Own Electricity: Net Metering*, *supra* note 45.

49. See Herman K. Trabish, *Arizona's Biggest Utility Proposes a Cut to Net Metering*, GREENTECHSOLAR (July 12, 2013), <http://www.greentechmedia.com/articles/read/arizonas-biggest-utility-proposes-to-a-cut-to-net-metering>.

50. See Rick Tempchin, *Time to Rethink Metering Rules: Cost and Fairness*, INTELLIGENT UTIL. (May 28, 2013), <http://www.intelligentutility.com/article/13/05/time-rethink-metering-rules-cost-and-fairness>. As to whether electricity is a “good” or a “service” and how it should be treated under the law, see THE NEW RULES, *supra* note 33, at 212–23.

51. See Tempchin, *supra* note 50. The retail rate of NSTAR power is close to \$0.17/kWh in 2013 for retail residential customers, while the ISO-NE wholesale rate for that power is less than \$0.05/kWh. See, e.g., GREEN CARLISLE, *COMPUTING THE ROI OF A SOLAR ENERGY SYSTEM 2* (2013), available at <http://greencarlisle.org/wordpress/wp-content/uploads/2013/08/Computing-the-ROI-of-a-solar-energy-system.pdf> (“Using a current NSTAR rate of \$0.17 per kWh . . .”). See *Hourly Data*, ISO NEW ENGLAND, ISO-NE.com (last visited Oct. 26, 2013), for real-time market data on wholesale prices.

52. MidAmerican Energy Co., 94 FERC ¶ 61,340, ¶¶ 62,262–62,264 (2001). In March 2001, MidAmerican Energy Company challenged before the FERC the state of Iowa’s regulations “directing MidAmerican to interconnect with three Alternate Energy facilities and to offer net billing arrangements to those facilities.” *Id.* ¶ 62,261. MidAmerican also requested a declaratory order that federal law preempted these regulations. *Id.* MidAmerican asked the

held that no sale occurs when an individual installs distributed generation and accounts for its dealings with the utility through the practice of netting.⁵³ Net metering is not deemed a retail or wholesale sale of power, and therefore, not subject to any federal law limitations on the price implications of net metering.⁵⁴ In the 2009 *Sun Edison* case, the FERC determined that it lacks jurisdiction over the generator if there is no net sale of power to the utility over the billing period.⁵⁵ There is no net sale unless the customer sells back more energy than the back-up power it consumes within the billing period.⁵⁶ While neither the *MidAmerican* case nor the *Sun Edison* case presented such facts of a net power flow to the utility from the net metered generator, both decisions meticulously and exhaustively limited this legal finding only to situations where there was no net flow of power back to the power grid.⁵⁷

In Rhode Island, there is a challenge to net metering where the wind generator at the Portsmouth High School is directly interconnected to the distribution grid rather than first serving a substantial host load, thus having virtually 100% of net power flow back to the grid.⁵⁸

III. THE SECOND DIMENSION: DOING POWER UNTO OTHERS . . .

A. RENEWABLE PORTFOLIO STANDARDS

Renewable Portfolio Standards (RPS) require electric utilities and other retail electric providers to include in their

commission to undertake enforcement action against the Iowa Board or to issue a declaratory order that the final orders of the Iowa Board are preempted by PURPA. *Id.*

53. *Id.* ¶ 62,263.

54. *Id.*

55. See *Sun Edison LLC*, 129 FERC ¶ 61,146, ¶61,621 (2009), *modified on reh'g*, 131 FERC ¶ 61,213 (2010).

56. *Id.*

57. See *id.* ¶¶ 61,620–61,621; *MidAmerican Energy Co.*, 94 FERC, ¶ 62,263.

58. See *In re Complaint by Benjamin Riggs relating to Net Metering at the Portsmouth Wind Generator Facility & Nat'l Grid-Electric*, No. D-10-126 (R.I. P.U.C. May 19, 2010), *available at* <http://www.ripuc.org/eventsactions/docket/D-10-126-Riggs-Portsmouth-Ord20510%2810-13-11%29.pdf> (arguing that as an independent wholesale project, the wind generator can be paid no more than the avoided cost afforded to Qualifying Facilities under PURPA).

retail sales annually a specified percentage of electricity supply from specified renewable energy sources in the form of acquired Renewable Energy Credits (RECs).⁵⁹ Thirty-eight U.S. states and the District of Columbia have RPS.⁶⁰ The current RPS standards are projected to add 76,750 megawatts of additional renewable generation by 2025.⁶¹

“Most states allow solar, wind, biomass, and landfill gas resources to qualify in RPS programs; states are less consistent regarding eligibility for biogas, municipal solid waste (MSW), geothermal, [all] hydro resources, fuel cells, and ocean tidal renewable resources to qualify.”⁶² Renewable power standards in the state RPS programs have faced recent efforts to repeal or weaken them in Ohio, Michigan, Kansas, Missouri, North Carolina, Vermont, Pennsylvania, Connecticut, Maryland, and Wisconsin.⁶³ These states constitute about one-fourth of the states that have RPS programs.⁶⁴ In other states, while maintaining the renewable percentage generation requirements, states have broadened or are considering broadening the definition of “renewable” energy to include technologies not normally associated with renewable energy.⁶⁵ Some states have considered allowing existing, rather than new, resources to qualify,⁶⁶ and Oregon, Montana, and Maine

59. See *Renewable Portfolio Standards*, U.S. ENVTL. PROTECTION AGENCY, <http://www.epa.gov/agstar/tools/funding/renewable.html> (last visited Oct. 9, 2013); *SREC FAQ*, SOLSYSTEMS, <http://www.solsystemscompany.com/our-resources/srec-knowledge-center/srec-faq> (last visited Oct. 26, 2013).

60. See *Rules, Regulations & Policies for Renewable Energy*, DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, www.dsireusa.org/summarytables/rrpre.cfm (last visited Oct. 11, 2013).

61. Brad Plumer, *The Biggest Fight over Renewable Energy Is Now in the States*, WASH. POST WONKBLOG (Mar. 25, 2013, 4:01 PM), <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/03/25/the-biggest-fights-over-renewable-energy-are-now-happening-in-the-states>.

62. See Steven Ferrey, *Follow the Money! Article I and Article VI Constitutional Barriers to Renewable Energy in the U.S. Future*, 17 VA. J.L. & TECH. 89, 98 (2012).

63. See Herman K. Trabish, *Numbers from the War on State Renewables Standards*, GREENTECHMEDIA (Mar. 25, 2013), www.greentechmedia.com/articles/read/numbers-from-the-war-on-state-renewables-standards.

64. See *id.*; *Rules, Regulations & Policies for Renewable Energy*, *supra* note 60.

65. See Trabish, *supra* note 63.

66. *Id.* (noting Washington’s “effort to allow already built hydroelectric projects to count toward the state’s 15 percent by 2020 standard”).

are considering adding hydropower,⁶⁷ which many states do not include. Maryland has considered including natural gas-power electric generation, while Wisconsin has considered nuclear power generation.⁶⁸ West Virginia and Massachusetts allow coal-derived fuels producing power to qualify.⁶⁹

About three-quarters of California's 33% renewable energy goal legally must come from California pursuant to state regulation "even though other states can produce renewables at lower cost due to natural resource advantages (e.g., wind in Wyoming). Democrats say this is important to foster energy independence. You never know when Utah will bomb Wyoming."⁷⁰ There are a number of the thirty-eight U.S. states with RPS that have incorporated credit multipliers and geographic restrictions or preferences to promote in-state/in-region generation of power, to the exclusion of external power:

- Eight of the thirty-eight RPS states, or 21%, have REC multipliers for in-state generation: Arizona,⁷¹ Colorado,⁷² Delaware,⁷³ Maine,⁷⁴ Michigan,⁷⁵ Missouri,⁷⁶ Nevada,⁷⁷ and Washington.⁷⁸
- Four of the RPS states, or about 10%, including two states that also provide for a geographically discriminatory REC multiplier, have either a requirement or preference for in-state generation: California,⁷⁹ Colorado,⁸⁰ North Carolina,⁸¹ and Ohio.⁸²

67. *Id.*

68. *Id.*

69. *Id.*

70. *California's Coming Green-Outs: The Wind and Solar Mandate Means Future Power Shortages*, WALL ST. J. (Mar. 29, 2013, 6:46 PM), <http://online.wsj.com/article/SB10001424127887324582804578344500414630778.html> (subscription required).

71. ARIZ. ADMIN. CODE § R14-2-1806(D) (2009).

72. COLO. REV. STAT. § 40-2-124(c)(IX) (2013).

73. DEL. CODE ANN. tit. 26, § 356(a)–(c) (Supp. 2012).

74. ME. REV. STAT. tit. 35-A, § 3605 (2010).

75. MICH. COMP. LAWS ANN. § 460.1039 (West Supp. 2013).

76. MO. ANN. STAT. § 393.1030(1)(4) (West 2011).

77. NEV. REV. STAT. ANN. § 704.7822(1) (LexisNexis 2009).

78. WASH. ADMIN. CODE § 194-37-110 (2008).

79. *See California Renewables Portfolio Standard*, DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA25R&re=1&ee=1 (last visited Oct. 7, 2013) (explaining that a maximum of twenty-five percent of RPS compliance can be achieved through the use of tradable renewable energy credits;

- Four of the thirty-eight RPS states, or about 10%, give program preferences to the use of in-state manufactured products or in-state labor forces: Arizona,⁸³ Delaware,⁸⁴ Michigan,⁸⁵ and Montana.⁸⁶
- Eleven of the thirty-eight RPS states, representing 28%, have a requirement for in-region, rather than in-state, geographic location of generation to create RECs, including one of the states that also has in-state multipliers and one with an in-state preference: Connecticut,⁸⁷ Illinois,⁸⁸ Maine,⁸⁹ Maryland,⁹⁰ Massachusetts,⁹¹ New Hampshire,⁹² North Carolina⁹³, Ohio,⁹⁴ Oregon,⁹⁵ Pennsylvania,⁹⁶ and Rhode Island.⁹⁷
- Eleven of the thirty-eight states, or 28%, have an in-state requirement for certain distributed power.
- Four of the thirty-eight states, or about 10%, have a benefit for an in-state capital component or labor.
- Some states have multiple multipliers and preferences.⁹⁸
- Only seven of the thirty-eight states have no geographic preferences in their laws.

The legal issues associated with the regulatory requirement for regulated utilities to purchase credits from renewable power generation originating only or principally

therefore, the remainder of the RPS compliance must be attained through in-state power sales).

80. COLO. REV. STAT. ANN. § 40-2-124(e)(II–III) (West 2011).
81. N.C. GEN. STAT. ANN. § 62-133.8(b)(2)(e) (LexisNexis 2011).
82. OHIO REV. CODE ANN. § 4928.64(B)(3) (West 2011).
83. ARIZ. ADMIN. CODE § R14-2-1806(E) (2009).
84. DEL. CODE ANN. tit. 26, § 356(d)–(e) (Supp. 2012).
85. MICH. COMP. LAWS ANN. § 460.1039(2)(d)–(e) (West Supp. 2013).
86. MONT. CODE ANN. § 69-3-2005(3)(a) (2013).
87. CONN. GEN. STAT. ANN. § 16-245a(b) (West Supp. 2013).
88. 20 ILL. COMP. STAT. ANN. 3855/1-56(b) (West 2011).
89. See 65-407-311 ME. CODE R. § 6(D) (LexisNexis 2011).
90. MD. CODE REGS. 20.61.03(D) (2011).
91. See MASS. GEN. LAWS ANN. ch. 25A, § 11F(b) (LexisNexis Supp. 2013).
92. See N.H. REV. STAT. ANN. § 362-F:6(IV)(a) (LexisNexis Supp. 2012).
93. *Territory Served*, PJM INTERCONNECTION, <http://www.pjm.com/about-pjm/who-we-are/territory-served.aspx> (last visited Oct. 20, 2013).
94. See OHIO REV. CODE ANN. § 4928.64(C)(4)(b) (LexisNexis Supp. 2012).
95. See OR. REV. STAT. ANN. § 469A.135(1)(a) (West Supp. 2013).
96. See 73 PA. CONS. STAT. ANN. § 1648.4 (West Supp. 2013).
97. See R.I. GEN. LAWS § 39-26-4(d) (Supp. 2012).
98. See, e.g., ARIZ. ADMIN. CODE § R14-2-1806(D)–(E) (2009).

within the state, and whether that affected power is in interstate commerce, are discussed below in Part III.C.

B. SYSTEM BENEFITS CHARGES

A system benefits charge (SBC) is a per-kilowatt-hour power surcharge imposed on all retail electricity consumers within a state utility's service territory through monthly utility bills, which creates an additional state-controlled or administered energy fund.⁹⁹ These state renewable trust funds distribute money to subsidize various renewable energy resource projects and technologies pursuant to state legislatures.¹⁰⁰ Approximately one-third of U.S. states have enacted SBC and "public benefit funds."¹⁰¹ Eighteen states, plus the District of Columbia, are included through a small surcharge on electricity bills.¹⁰² The funds created a range in size from less than \$1 million to greater than \$300 million per year.¹⁰³ A number of these states, either explicitly or as a matter of practice, will fund only sustainable energy projects within their own states, even though power from all sources in and outside the state are taxed to create the SBC fund.¹⁰⁴

Some states de jure or de facto restrict SBC funds to in-state projects.¹⁰⁵ Illinois, for example, intends to benefit from "developing new renewable energy resources and clean coal

99. See 2 INDEPENDENT POWER, *supra* note 33, § 10:114.

100. See Public Benefits Funds, *supra* note 15.

101. *Id.* (stating that fifteen states, Washington, D.C., and Puerto Rico have public benefit funds); see ELIZABETH DORIS ET AL., NAT'L RENEWABLE ENERGY LAB., STATE OF THE STATES 2009: RENEWABLE ENERGY DEVELOPMENT AND THE ROLE OF POLICY 65–66 (2009), available at <http://www.nrel.gov/docs/fy10osti/46667.pdf>.

102. See Public Benefits Funds, *supra* note 15.

103. See Gary McNeil, *State Clean Energy Funds Fact Sheet*, U.S. ENVTL. PROTECTION AGENCY, http://www.epa.gov/chp/policies/funds_fs.html (last updated Apr. 2009).

104. See 2 INDEPENDENT POWER, *supra* note 33, § 10:114; Kirsten H. Engel, *The Dormant Commerce Clause Threat to Market-Based Environmental Regulation: The Case of Electricity Deregulation*, 26 ECOLOGY L.Q. 243, 295 (1999) ("The electricity burdened by the [system benefits] charge includes both electricity generated within the state and that imported from out-of-state sources As with the renewable portfolio standard a state's primary interest lies in supporting its own in-state renewables industry. It is only rational that the state will use the funds collected through the surcharge to subsidize in-state industries exclusively.").

105. See, e.g., 20 ILL. COMP. STAT. 687/6-2 (2013).

technologies for use in Illinois”¹⁰⁶ and distribute these funds based on criteria that “promote the goal of fostering investment in and the development and use, *in Illinois*, of renewable energy resources.”¹⁰⁷ Illinois has not been challenged; however, New York utilities, in 2011, challenged New York’s alleged misuse of system benefit charge funds for non-energy-related economic development programs.¹⁰⁸

C. LEGAL CONCERNS

The constitutional dormant Commerce Clause prohibits state regulatory actions that are facially discriminatory against private interstate commerce.¹⁰⁹ The dormant Commerce Clause precedent is “driven by concern about ‘economic protectionism—that is, regulatory measures designed to benefit in-state economic interests by burdening out-of-state competitors.’”¹¹⁰ State statutes found to discriminate against out-of-state commerce interests based on geography or favoring local interests, are found to be *per se* invalid.¹¹¹ Discriminatory statutes are subject to “strict scrutiny,” weighing a compelling state interest that is the least restrictive means to achieve that interest.¹¹²

106. *Id.*

107. 20 ILL. COMP. STAT. 687/6-3(b) (2013) (emphasis added); *see also id.* 687/6-4(b) (“The Renewable Energy Resources Trust Fund shall be administered by the Department to provide grants, loans, and other incentives to foster investment in and the development and use of renewable resources as provided in Section 6-3 . . . or pursuant to the Illinois Renewable Fuels Development Program Act.”).

108. Lisa Wood, *New York Utilities Challenge Proposal to Use Clean Energy Funds for Economic Development*, ELEC. UTIL. WK., Aug. 1, 2011, at 17 (noting that the utilities charged that the funds must be devoted to utility-based programs, rather than start-up companies and under-used technologies).

109. *See* Dep’t of Revenue of Ky. v. Davis, 553 U.S. 328, 338 (2008) (citing Or. Waste Sys., Inc. v. Dep’t of Env’tl. Quality of Or., 511 U.S. 93, 100 (1994)).

110. *Id.* at 337–38 (quoting New Energy Co. of Ind. v. Limbach, 486 U.S. 269, 273–74 (1988)).

111. *See* Gen. Motors Corp. v. Tracy, 519 U.S. 278, 297–98 (1997); Or. Waste Sys., Inc. v. Dep’t of Env’t Quality of Or., 511 U.S. 93, 99 (1994); City of Philadelphia v. New Jersey, 437 U.S. 617, 624 (1978) (noting that if a statute is facially discriminatory, it is virtually *per se* invalid).

112. *See* Dep’t of Revenue of Ky., 553 U.S. at 338 (“A discriminatory law is virtually *per se* invalid . . . and will survive only if it advances a legitimate local purpose that cannot be adequately served by reasonable

The U.S. Supreme Court has held that the scope of commerce among the states is broadly defined.¹¹³ In-state coal cannot be required to be used by a state even for the rationale of satisfying federal Clean Air Act requirements;¹¹⁴ income tax credits cannot be given by a state only to in-state producers of fuel additives;¹¹⁵ a state cannot regulate in favor of, or require the use of, its own in-state energy resources,¹¹⁶ nor can it by regulation harbor energy-related resources originating in the state from leaving the state¹¹⁷:

[We] consistently have held that the Commerce Clause of the Constitution . . . precludes a state from mandating that its residents be given a preferred right of access, over out-of-state consumers, to natural resources located within its borders or to the products derived therefrom . . . [A] State is without power to prevent privately owned articles of trade from being shipped and sold in interstate commerce on the ground that they are required to satisfy local demands or because they are needed by the people of the State.¹¹⁸

Electrons in interstate commerce cannot be traced.¹¹⁹ The Constitution further applies to the sale and transmission of electric energy in interstate commerce¹²⁰: “[I]t is difficult to conceive of a more basic element of interstate commerce than electric energy, a product used in virtually every home and every commercial or manufacturing facility. No state relies solely on its own resources in this respect.”¹²¹

nondiscriminatory alternatives.” (internal quotation marks and citations omitted)).

113. See *City of Philadelphia*, 437 U.S. at 627 (holding that a state cannot discriminate against articles of commerce originating in other states “unless there is a reason, apart from their *origin*, to treat them differently” (emphasis added)).

114. *Alliance for Clean Coal v. Miller*, 44 F.3d 591, 593, 596–97 (7th Cir. 1995).

115. *New Energy Co. of Ind.*, 486 U.S. at 271, 278–80.

116. *Wyoming v. Oklahoma*, 502 U.S. 437, 454–56 (1992); *Alliance for Clean Coal v. Craig*, 840 F. Supp. 554, 560 (N.D. Ill. 1993).

117. *New Eng. Power Co. v. New Hampshire*, 455 U.S. 331, 339 (1982).

118. *Id.* at 338 (internal quotations omitted).

119. See *New York v. FERC*, 535 U.S. 1, 7 n.5 (2002) (discussing *Fed. Power Comm’n v. Fla. Power & Light Co.*, 404 U.S. 453 (1972)).

120. See *id.*; see also *id.* at 17 (determining that transmissions on the interconnected national grids constitute transmissions in interstate commerce).

121. *FERC v. Mississippi*, 456 U.S. 742, 757 (1982).

Major states have recently encountered litigation on this very constitutional issue regarding such state renewable power regulation allegedly violating the Commerce Clause¹²²:

- A challenge by conventional power generators in New Jersey to in-state energy facility preferences;¹²³ as well as similar challenges in Maryland,¹²⁴ with both held not

122. Cf. Complaint for Injunctive & Declaratory Relief at 2, *Am. Tradition Inst. v. Colorado*, No. 11-cv-00859 (D. Colo. Apr. 4, 2011) (addressing the constitutionality of Colorado's renewable energy standard); Complaint at 1, *TransCanada Power Mktg. Ltd. v. Bowles*, No. 4:10-cv-40070 (D. Mass. Apr. 16, 2010) (addressing the constitutionality of Massachusetts' renewable energy programs).

123. See *PJM Interconnection, L.L.C.*, 135 FERC ¶ 61,022, *order clarified on reh'g* by 137 FERC ¶ 61,145 (2011). In 2011, New Jersey enacted legislation to encourage the acquisition by utilities of the output of 2000 megawatts of new in-state power projects. *Id.* at 61,089. New Jersey faces a pending lawsuit by several existing independent power generators asserting that the state law is in violation of the Constitution's Commerce Clause because it is predicated on in-state "favoritism." See Hannah Northey, *Energy Markets: Utilities Challenge N.J. Law While Preparing to Reap Its Benefits*, GREENWIRE (Mar. 2, 2011), <http://www.eenews.net/public/Greenwire/2011/03/02/4>. The New Jersey act is an explicit effort to promote the construction of new generation facilities in New Jersey, and the statute allegedly discriminates by ordering utilities to sign long-term contracts only with in-state generation facilities participating in multi-state PJM ISO capacity. See *PJM Interconnection, L.L.C.*, 135 FERC ¶ 61,022, ¶ 61,089, *order clarified on reh'g* by 137 FERC ¶ 61,145 (2011); Mary Powers, *PJM Generators File Complaint with FERC Seeking Relief from NJ In-State Generation Law*, ELEC. UTIL. WK., Feb. 7, 2011, at 11, 13. In response, the FERC amended the PJM ISO rules to prevent New Jersey state law from attempting to encourage construction of in-state power generation by, in part, causing them to bid power into the PJM system at suppressed prices in order to win capacity right auctions. See Mary Powers, *Rebuffed by FERC Ruling, New Jersey BPU Plans to Look Again at How to Attract New Generation*, ELEC. UTIL. WK., May 23, 2011, at 4, 6, *available at* <http://www.electricdrive.org/sites/testing/index.php?ht=a/GetDocumentAction/i/22845>. FERC, on April 12, 2011, eliminated a PJM rule that allowed a prior exemption for projects to make minimum offer prices when tempered by state energy programs. *Id.* The pending lawsuit in New Jersey asserts that the state law is in violation of the Constitution's dormant Commerce Clause both because it is predicated on in-state "favoritism," and the New Jersey act is a "blatant and explicit effort to promote the construction of new generation facilities in New Jersey." Northey, *supra*; see also *PPL EnergyPlus, LLC v. Hanna*, No. 11-745, 2013 WL 5603896 (D.N.J. Oct. 11, 2013) (finding a state pilot project preempted by the Federal Power Act and therefore unconstitutional in violation of the Supremacy Clause); *PPL EnergyPlus, LLC v. Nazarian*, No. MJG-12-1286, 2013 WL 5432346 (D. Md. Sept. 30, 2013) (finding state generation order unconstitutional in violation of the Supremacy Clause).

124. *PPL EnergyPlus, LLC v. Nazarian*, No. MJG-12-1286, 2013 WL 5432346 (D. Md. Sept. 30, 2013).

to violate the Commerce Clause, but both to violate the Supremacy Clause of the Constitution;

- Suit involving renewable power RPS RECs in Colorado;¹²⁵
- Suit on Missouri RPS RECs limited to only in-state projects;¹²⁶ and
- TransCanada's suit against Massachusetts on discrimination against out-of-state energy projects for RPS RECs and renewable energy contracts,¹²⁷ which was partially settled in favor of the challengers.¹²⁸

With approximately half of the thirty-eight RPS states engaging in some sort of in-state favoritism with these state incentives,¹²⁹ and each state doing so in an individualized

125. See Complaint for Injunctive & Declaratory Relief at 2, *Am. Tradition Inst. v. Colorado*, No. 11-cv-00859 (D. Colo. Apr. 4, 2011). American Tradition Institute's (ATI) Environmental Law Center filed a lawsuit in federal court challenging the constitutionality of Colorado's renewable energy standard, based upon evidence that the state's law violates the Commerce Clause. *Id.* at 2, 5–6. ATI's complaint argued that because the state mandate provides economic benefits to Colorado's renewable electricity generators that are not available to out-of-state power generators, the program violates the dormant Commerce Clause. *Id.* at 16–21.

126. See *State ex rel. Mo. Energy Dev. Assoc. v. Pub. Serv. Comm'n of Mo.*, No. 10AC-CC00512, at 14 (Cole Cnty. Ct. June 29, 2011) (holding that the RPS program "takes the cash property of utilities (and their ratepayers) and transfers it to certain customers" without due process). The state trial court in 2011 ruled that the Missouri RPS program was illegal because it required RECs to be generated by in-state projects or projects that delivered the power to in-state customers. *Id.* at 11. The decision was reversed on appeal. *State ex rel. Mo. Energy Dev. Ass'n v. Pub. Serv. Comm'n of Mo.*, 386 S.W.3d 165 (Mo. Ct. App. 2012).

127. See Complaint at 1, *TransCanada Power Mktg. Ltd. v. Bowles*, No. 4:10-cv-40070 (D. Mass. Apr. 16, 2010). In April 2010, TransCanada sued Massachusetts, alleging dormant Commerce Clause violations regarding requirements that state utilities enter long-term contracts with in-state new renewable energy projects and that solar renewable energy credits be earned only by in-state solar photovoltaic power projects, regardless of where the power generation creating the RECs was sold. *Id.* at 5–19. TransCanada alleged that Massachusetts's ratepayers would be negatively impacted because they would be forced to pay higher rates for only in-state renewable energy. *Id.* at 8.

128. Notice of Partial Dismissal of Action and Partial Settlement Agreement at 1–3, *TransCanada Power Mktg. Ltd. v. Bowles*, No. 4:10-cv-40070 (D. Mass. May 2010), available at <http://www.mass.gov/eea/docs/doer/renewables/solar/settlement-agreement.pdf>.

129. See *supra* notes 71–98 and accompanying text.

manner,¹³⁰ this foretells a long period of potential individual legal challenge.

IV. THE THIRD DIMENSION: MERGING TWO DIMENSIONS

Both the Supremacy Clause of our First Dimension and the dormant Commerce Clause of our Second Dimension are combined in Vermont regulations,¹³¹ which are now under serious constitutional challenge regarding energy regulation.¹³² Similar multi-dimensional constitutional challenges were made in New Jersey¹³³ and Maryland.¹³⁴ While these cases do not concern traditional renewable power, Vermont addresses nuclear power, which shares a low-carbon profile with renewable energy sources, and which is bundled with renewable power in some congressional legislation.¹³⁵ In this ongoing dispute, Vermont denied an existing operating power generation facility from a state permit for continuing operation unless it sold a substantial portion of its electric output in wholesale transactions to state utilities at discounted rates to market prices set in the regional ISO New England (ISO-NE) wholesale market.¹³⁶

The outcome of this issue illustrates the costs to citizens when the state regulates without careful consideration of constitutional requirements: when the suit was initiated in 2011, Vermont asked the court initially that the plaintiff energy company should pay the state's, as well as its own, legal

130. See *supra* notes 122–28 and accompanying text.

131. See Act 74, 2005 Vt. Acts & Resolves 599; Act 160, 2006 Vt. Acts & Resolves 204; Act 189, 2008 Vt. Acts & Resolves 478 (requiring affirmative legislative approval for storage of spent nuclear fuel).

132. See *Entergy Nuclear Vt. Yankee, LLC v. Shumlin*, 838 F. Supp. 2d 183, 188–90 (D. Vt. 2012), *aff'd in part, rev'd in part*, *Entergy Nuclear Vt. Yankee, LLC v. Shumlin*, No. 12-791-cv (2d Cir. Aug. 14, 2013) (holding that the enactments are preempted by the Atomic Energy Act, making them constitutionally invalid).

133. *PPL EnergyPlus, LLC v. Hanna*, No. 11-745, 2013 WL 5603896 (D.N.J. Oct. 11, 2013) (finding state regulation unconstitutional).

134. *PPL EnergyPlus, LLC v. Nazarian*, No. MJG-12-1286, 2013 WL 5432346 (D. Md. Sept. 30, 2013) (finding state regulation unconstitutional).

135. See, e.g., Michael Vickerman, *Commentary: Wisconsin Legislature Weighs Nuclear Option for Renewables*, MIDWEST ENERGY NEWS (Mar. 4, 2013), <http://www.midwestenergynews.com/2013/03/04/commentary-wisconsin-legislature-weighs-nuclear-option-for-renewables/>.

136. See *Entergy Nuclear Vt. Yankee*, 838 F. Supp. 2d at 236.

expenses of the litigation.¹³⁷ The outcome of this case, however, turned the tables when it was found that the state had taken an unconstitutional action: it enacted energy regulation that the federal court found unconstitutional.¹³⁸ The state was found responsible for reimbursing the plaintiffs' legal fees, which were around \$5 million at the trial court level and, with appeal, continuing to mount until later reversed on appeal.¹³⁹ Similar requests for attorney fees to plaintiffs who successfully challenged state energy regulation are now pending in New Jersey,¹⁴⁰ Maryland,¹⁴¹ and California.¹⁴²

In 2012, the federal district court ruled that this Vermont regulation of energy violated at once, both of the first dimension (preemption) and second dimension (dormant Commerce Clause) constitutional limitations on state energy regulation.¹⁴³ Vermont could not discriminate against sale of power interstate outside of its origin in Vermont.¹⁴⁴

This opinion followed the Supreme Court decision in *New England Power Co. v. New Hampshire*.¹⁴⁵ *New England Power* overturned, as a violation of the dormant Commerce Clause, an order of the State Public Utilities Commission that restrained within the state for the financial advantage of in-state ratepayers, renewable power produced within the state¹⁴⁶:

137. Anne Galloway, *Shumlin Wants to "Bill Back" Legal Expenses in Entergy Suit to Entergy*, VTDIGGER.ORG (Apr. 30, 2011), <http://vtdigger.org/2011/04/30/shumlin-wants-to-%E2%80%9Cbill-back%E2%80%9D-legal-expenses-in-entergy-suit-to-entergy/>.

138. See *Entergy Nuclear Vt. Yankee*, 838 F. Supp. 2d at 242–43.

139. *Id.*; Andrew Stein, *Entergy May be Closing Vermont Yankee, But Litigation Goes On*, VTDIGGER.ORG (Sept. 10, 2013), <http://vtdigger.org/2013/09/10/entergy-may-be-closing-vermont-yankee-but-litigation-goes-on/>; see Kristin Carlson, *Court: Vermont Yankee Can Stay Open*, WCAX.COM (Aug. 14, 2013, 9:38 AM), www.wcax.com/story/23134529/appeals-court-rules-for-entergy-against-vermont.

140. Motion for Attorney Fees, PPL EnergyPlus, LLC v. Hanna, No. 11-745 (D.N.J. Nov. 25, 2013).

141. Motion for Attorney Fees, PPL EnergyPlus, LLC v. Nazarian, No. MJG-12-1286 (D. Md. Nov. 7, 2013).

142. Motion for Attorney Fees, Planning and Conservation League v. California, No. RG 12626904 (Cal. Sup. Ct. Nov. 26, 2013).

143. *Entergy Nuclear Vt. Yankee*, 838 F. Supp. 2d at 242–43.

144. See *id.*; see also *id.* at 236.

145. 455 U.S. 331, 338–39 (1982).

146. *Id.* at 336, 338–39; see also U.S. CONST. art 1, § 8, cl. 3 (“The Congress shall have Power . . . To regulate Commerce with foreign Nations, and among the several States . . .”).

"[We] consistently have held that the Commerce Clause of the Constitution . . . precludes a state from mandating that its residents be given a preferred right of access, over out-of-state consumers, to natural resources located within its borders or to the products derived therefrom."¹⁴⁷

The Vermont court in 2012 reiterated that "states are 'without power to prevent privately owned articles of trade from being shipped and sold in interstate commerce on the ground that they are required to satisfy local demands or because they are needed by the people of the State' . . . a 'protectionist regulation' violating the Commerce Clause."¹⁴⁸ The state also could not regulate or condition any wholesale power transactions.¹⁴⁹ The court stated:

Under the Federal Power Act, 16 U.S.C. § 791a *et seq.*:

Congress has drawn a bright line between state and federal authority in the setting of wholesale rates and in the regulation of agreements that affect wholesale rates. States may not regulate in areas where FERC has properly exercised its jurisdiction to determine just and reasonable wholesale rates or to insure that agreements affecting wholesale rates are reasonable

Furthermore, a state, "must . . . give effect to Congress' desire to give FERC plenary authority over interstate wholesale rates, and to ensure that the States do not interfere with this authority."

Under the "filed-rate doctrine," state courts and regulatory agencies are preempted by federal law from requiring the payment of rates other than the federal filed rate.¹⁵⁰

In the Third Dimension, the constitutional issues of both of the First and Second Dimensions have combined.

V. THE FOURTH DIMENSION: COPPER AND FIRST REFUSAL

There are other dimensions. Here we focus on several states that have regulated whether out-of-state companies that would want to construct electric transmission facilities are

147. *New Eng. Power Co.*, 455 U.S. at 338 (citations omitted) (quoting *Foster-Fountain Packing Co. v. Haydel*, 278 U.S. 1, 10 (1928)).

148. *Entergy Nuclear Vt. Yankee*, 838 F. Supp. 2d at 236 (quoting *New England Power*, 455 U.S. at 338–39).

149. *Id.* at 233.

150. *Id.* at 233–34 (citations omitted).

barred in favor of in-state companies.¹⁵¹ This type of regulation raises constitutional issues.¹⁵² There is a potential conflict between federal jurisdiction and the in-state transmission decisions of some states on the issue of who builds the means to transmit power.¹⁵³ To date, electric power requires a transmission network to be usable.¹⁵⁴

A. IN THE ELECTRIC FIELD

Electrons, which are energy, are never consumed; their velocity and force of movement is diminished as electricity is used. Their movement creates an electro-magnetic field, which is a mechanism to transfer energy from the point of original movement along a conductive wire to a distant place on the transmission network. In key ways, the movement of electricity is not delivering a commodity, but allowing others to realize benefits from the velocity and force of the movement itself.¹⁵⁵ We do not “consume” electrons, but rather we consume work created by their movement.¹⁵⁶ Electric circuits are a means for conveying current energy from one place to another.¹⁵⁷ Current is the rate of flow of electric charge from one region to another in a circuit.¹⁵⁸ Because the motions of the electrons are random, there is no net flow of charge in any direction inside the copper wire.¹⁵⁹

151. Cf. RISHI GARG, NAT’L REGULATORY RESEARCH INST., WHAT’S BEST FOR THE STATES: A FEDERALLY IMPOSED COMPETITIVE SOLICITATION MODEL OR A PREFERENCE FOR THE INCUMBENT? STATE ADOPTION OF RIGHT OF FIRST REFUSAL STATUTES IN RESPONSE TO FERC ORDER 1000 AND THE DORMANT COMMERCE CLAUSE, at iv (2013), *available at* <http://communities.nrri.org/documents/317330/d852a44f-0e5e-48d5-8aaa-2e09f167c24a> (analyzing right-of-first-refusal statutes enacted in Minnesota, North Dakota, and South Dakota, and proposed in New Mexico and Oklahoma).

152. See *id.* (analyzing whether the right-of-first-refusal statutes are constitutional under the dormant Commerce Clause).

153. See, e.g., *New York v. FERC*, 535 U.S. 1, 4–5 (2002).

154. See Transmission Planning and Cost Allocation by Transmission Owning & Operating Pub. Utils., 136 FERC ¶ 61,051, ¶ 116 (2011) (stating that transmission networks improve the delivery of electricity).

155. See Steven Ferrey, *Inverting Choice of Law in the Wired Universe: Thermodynamics, Mass, and Energy*, 45 WM. & MARY L. REV. 1839, 1863–64 (2004).

156. See *id.*

157. HUGH D. YOUNG & ROGER A. FREEDMAN, *UNIVERSITY PHYSICS* 799 (9th ed. 1996).

158. *Id.*

159. *Id.* at 800.

All this changes when an electric field is applied to the copper wire.¹⁶⁰ There is a very slow motion of the moving charges in the direction of the force of the electric field, which is resultant flow of moving charges is a current in a wire.¹⁶¹ For a conductor to have a steady current, it must be part of a path that forms a closed loop.¹⁶² The influence that makes current flow from lower potential to a higher potential is called electromotive force¹⁶³ and is measured as a volt or a joule/coulomb.¹⁶⁴ The charge moves around the circuit at varying levels of potential energy.¹⁶⁵

Some will argue that the electric company is selling its customers electrons. In a direct current circuit, the charges move the whole length of the circuit.¹⁶⁶ In theory then, if an electric company used direct current, electrons from the copper coil turned by the turbine would eventually make their way into our homes. But the customer does not consume these electrons; only the energy they are carrying is consumed by the end user.¹⁶⁷ Furthermore, for every electron that a customer receives from the electric company, the electric company receives an electron from the customer; the charge is never consumed nor created.¹⁶⁸ The charges are all there in the beginning and at the end.¹⁶⁹

Electricity is transmitted, however, via alternating current.¹⁷⁰ Because the current is constantly changing direction, the electrons do not flow around the circuit, but oscillate in a confined area, delivering energy in the form of an energized electric field.¹⁷¹ Electricity is neither tangible nor

160. See *id.* at 804, 809.

161. See *id.* at 808.

162. *Id.* at 809.

163. *Id.*

164. See *id.* at 165 (stating that a joule is a unit of energy); *id.* at 675 (stating that coulomb is a unit of charge).

165. See *id.* at 809.

166. See *id.*

167. Ferrey, *supra* note 155, at 1863–64.

168. *Id.* at 1910–14.

169. See 2 INDEPENDENT POWER, *supra* note 33, § 2:1, at 2–4, § 2:1.1, at 2–8; THE NEW RULES, *supra* note 33, at 211–32.

170. See YOUNG & FREEDMAN, *supra* note 155, at 850.

171. See, e.g., Craig T. Liljestrand, *EMFs and the Potential for Injury: Real Danger or Overreaction?*, 62 DEF. COUNS. J. 400, 400–401 (1995).

movable.¹⁷² The courts have determined that electrons in interstate commerce cannot be traced.¹⁷³ Notwithstanding, the FERC has held seven times that electricity is a tangible good governed by the Uniform Commercial Code.¹⁷⁴

B. RIGHTS OF FIRST REFUSAL

Can states require that additional transmission facilities be built by incumbent in-state businesses? Recall that transmission really is everything: it is not the copper molecule electrons, but the movement of these electrons, that creates and delivers electric power.¹⁷⁵ Therefore, speaking of the physical reality rather than the legal fiction, transmission *is* everything. Copper is everything.

The FERC has attempted to regulate who builds new transmission capacity.¹⁷⁶ The FERC exclusively regulates transmission transactions and tariffs.¹⁷⁷ FERC Order 1000 requires incumbent transmission providers, utilities, to remove rights-of-first-refusal (ROFR) from FERC-approved tariffs.¹⁷⁸ And all transmission tariffs are exclusively within FERC, rather than state, jurisdiction.¹⁷⁹ The FERC does not regulate the construction of transmission facilities themselves, only economic tariffs for their transactions.¹⁸⁰ Failure to consider and evaluate nonincumbent projects could violate the FERC

172. Ferrey, *supra* note 155, at 1864.

173. See *New York v. FERC*, 535 U.S. 1, 7 n.5 (2002) (discussing *Fed. Power Comm'n v. Fla. Power & Light Co.*, 404 U.S. 453 (1972)).

174. Ferrey, *supra* note 155, at 1891.

175. *Id.* at 1910–12.

176. See *Transmission Planning and Cost Allocation by Transmission Owning & Operating Pub. Utils. (Order 1000)*, 136 FERC ¶ 61,051, ¶¶ 253–254, 258 (2011).

177. Ferrey, *supra* note 155, at 1889.

178. *Transmission Planning*, 136 FERC, ¶ 7. For an excellent treatment of this, see generally GARG, *supra* note 151 (summarizing and analyzing the impact of FERC Order 1000).

179. See *Transmission Planning*, 136 FERC, ¶ 287.

180. See *id.* This pertains only to Commission-jurisdictional tariffs or agreements and does not require removal of references to such state or local laws or regulations from Commission-approved tariffs or agreements. See *id.* ¶ 253 n.231. The FERC noted that Order 1000 does not address the prudence of investment decisions nor determine which particular entity should construct any particular transmission facility, but merely to allow more entities to be considered for potential construction responsibility. *Id.* ¶ 290.

Order 890 planning principle of “openness” in transmission planning.¹⁸¹

Nonetheless, some states have enacted ROFR statutes: for example, three states have enacted these,¹⁸² and a few other states have proposed them.¹⁸³ Minnesota has enacted an ROFR statute that confers upon the incumbent “the right to construct, own, and maintain an electric transmission line that has been approved for construction in a federally registered planning authority transmission plan and connects to facilities owned by that incumbent electric transmission owner.”¹⁸⁴ South Dakota created an ROFR, which confers to the incumbent “[t]he right to construct, own, and maintain an electric transmission line that connects to facilities owned by [the incumbent utility grid].”¹⁸⁵ North Dakota conferred an ROFR to the incumbent transmission provider under a certificate of public convenience and necessity, which cannot be issued to another if the existing public utility is willing and able to construct and operate a similar electric transmission line.¹⁸⁶

Other states have proposed statutes as well.¹⁸⁷ Except for North Dakota, each state’s actual or proposed statute confers upon an in-state incumbent transmission company the right to construct a facility identified and approved for construction in a federally approved FERC plan, at the expense of a potential competitor, contrary to the FERC’s order.¹⁸⁸ And this regulatory issue raises both of the previously discussed constitutional issues.¹⁸⁹ First, there is a Supremacy Clause issue lurking in states adopting ROFR despite federal FERC prohibition of such provisions, when the FERC has exclusive

181. *See id.* ¶ 229.

182. *See, e.g.*, MINN. STAT. § 216B.246 (2012); N.D. CENT. CODE § 49-03-01 (2011); S.D. CODIFIED LAWS § 49-32-19 (2011); GARG, *supra* note 151, at 10–13.

183. *E.g.*, S. 175, 51st Leg., 1st Sess. (N.M. 2013); *see also* GARG, *supra* note 151, at 11–13 (describing several states’ proposed ROFR bills).

184. MINN. STAT. § 216B.246, subdiv. 2 (2012).

185. S.D. CODIFIED LAWS § 49-32-20 (2011).

186. N.D. CENT. CODE § 49-03-01 (2011).

187. *See, e.g.*, S. 175, 51st Leg., 1st Sess. (N.M. 2013) (articulating New Mexico’s proposed ROFR language).

188. *Compare* N.D. CENT. CODE § 49-03-01 (2011), *with* MINN. STAT. § 216B.246 (2012), *and* S.D. CODIFIED LAWS § 49-32-19 (2011).

189. GARG, *supra* note 151, at iv.

authority to oversee such transactions.¹⁹⁰ Second, there is a dormant Commerce Clause issue when states favor in-state incumbent providers of electric transmission service in lieu of other or out-of-state providers.¹⁹¹ This is potentially a constitutional issue, in addition to being contrary to a federal order issued pursuant to the FERC's federal authority.¹⁹²

VI. THE FIFTH DIMENSION: BEYOND POWER TO CLIMATE

A. STATE CARBON CONTROL REGULATION

In the absence of federal climate change legislation in the United States, nine states (at one time ten states after Massachusetts later joined, and now reduced to nine Northeastern and Mid-Atlantic states after New Jersey withdrew¹⁹³) have combined into the Regional Greenhouse Gas Initiative (RGGI) to regulate only CO₂ from their larger power plants.¹⁹⁴ The RGGI states, as well as California,¹⁹⁵ identified ways to arrest so-called "leakage" into the state of less-costly

190. *See id.* at 17–18.

191. *See id.* at 13–17.

192. Federal Power Act, 16 U.S.C. § 797(g) (2012) (granting authority to the FERC to issue orders in the interest of the public).

193. *See Welcome*, REG'L GREENHOUSE GAS INITIATIVE, <http://www.rggi.org> (last visited Oct. 29, 2013) (noting that the nine states include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont).

194. *Id.*; *see* DAVID FARNSWORTH ET AL., REG'L GREENHOUSE GAS INITIATIVE, POTENTIAL EMISSIONS LEAKAGE AND THE REGIONAL GREENHOUSE GAS INITIATIVE (RGGI): EVALUATING MARKET DYNAMICS, MONITORING OPTIONS, AND POSSIBLE MITIGATION MECHANISMS, at ES-1 (2007), *available at* http://www.rggi.org/docs/il_report_final_3_14_07.pdf. Seven states signed the RGGI Memorandum of Understanding (MOU) originally and a few others later on; however, New Jersey recently withdrew, *see* Mireya Navarro, *Christie Pulls New Jersey from 10-State Climate Initiative*, N.Y. TIMES, May 26, 2011, http://www.nytimes.com/2011/05/27/nyregion/christie-pulls-nj-from-greenhouse-gas-coalition.html?_r=0, and other states have considered withdrawal from this cap-and-trade program. Amy Quinton, *Three States Consider Withdrawal from RGGI*, NEWBIOMASSNH (Apr. 7, 2011), <http://www.newbiomassnh.org/three-states-consider-withdrawal-from-rggi>.

195. CAP & TRADE SUBGROUP, CLIMATE ACTION TEAM, CAP AND TRADE PROGRAM DESIGN OPTIONS: FINAL REPORT 34–35 (2006), *available at* http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-03-27_CAP_AND_TRADE.PDF.

power whose carbon content is not regulated or affected.¹⁹⁶ The RGGI Staff Working Group investigated whether a substantial proportion of CO₂ emissions avoided by the RGGI could be offset and lost by corresponding increases of cheaper fossil fuel electric generation in non-RGGI states,¹⁹⁷ with early modeling under a “middle-of-the-road” scenario estimating leakage of CO₂ at 27% depending on the programmatic assumptions,¹⁹⁸ though earlier modeling and a “high” scenario placed the leakage percentage higher.¹⁹⁹ The governors in affected states agreed to “pursue technically sound measures to prevent leakage from undermining the integrity of the Program.”²⁰⁰ Because states do not want the greenhouse gas (GHG) carbon costs that they impose on their in-state power generators, which are then passed on to those utilities’ in-state consumers, to lead to higher-carbon out-of-state power imports of cheaper fossil-fueled power, they considered securing borders, or at least a power import surcharge to dissuade intruding power flows.²⁰¹

“Leakage” is not some kind of physical breach of power engineering.²⁰² Rather, it is the mere consumer or buyer preference for lower-priced commodities and services, even if they originate from outside the state.²⁰³ California imports power from eleven states, including a large amount of coal-fired power, and California’s choice to regulate carbon at the point of generation is necessary for California to get at the problem of

196. See FARNSWORTH ET AL., *supra* note 194, at ES-1. RGGI States such as New Jersey, New York, Maryland, and Delaware are bordered by states that are not signatories to the RGGI and do historically produce a large volume of electricity from coal-fueled power plants. See *id.* at ES-1, 9. Similarly, California imports power from eleven states, including a large amount of coal-fired power. See CAL. ENERGY COMM’N, 2006 NET SYSTEM POWER REPORT 1 (2007), available at <http://www.energy.ca.gov/2007publications/CEC-300-2007-007/CEC-300-2007-007.PDF>.

197. See FARNSWORTH ET AL., *supra* note 194, at ES-1 to ES-2.

198. *Id.* at 9.

199. The Author has observed that RGGI has removed earlier modeling estimates projecting a higher leakage percentage from its website.

200. REGIONAL GREENHOUSE GAS INITIATIVE, MEMORANDUM OF UNDERSTANDING 10 (2005), available at www.rggi.org/design/history/mou.

201. See *id.* The governors in affected states agreed to “pursue technically sound measures to prevent leakage from undermining the integrity of the program.” *Id.*

202. See FARNSWORTH ET AL., *supra* note 194, at ES-1.

203. *Id.*

high-carbon power leakage into the state.²⁰⁴ Wholesale electricity is moving constantly in interstate commerce at the speed of light.²⁰⁵ Leakage barriers typically attempt to arrest electricity in interstate commerce under normal market conditions.²⁰⁶

In a suit against the State of New York's RGGI program in 2009, New York's quick settlement had Consolidated Edison Company agreeing to pay the plaintiff cogeneration project for the cost of its additional carbon allowances through the end of their preexisting long-term contracts.²⁰⁷ New York's participation in the RGGI was challenged a second time in 2011 as being without proper legislative approval and only implemented by regulation.²⁰⁸

California has begun comprehensive regulation of all GHGs from all sources.²⁰⁹ The California carbon scheme requires that California reduce GHG emissions to 1990 levels by 2020, considering all in-state and out-of-state generation used to serve California's electric load.²¹⁰ California and other carbon-regulating states, however, must avoid regulating in a way that impermissibly burdens interstate commerce in electricity. Such burdens are not required to be direct prohibitions of power imports.

204. See CAL. ENERGY COMM'N, *supra* note 196, at 1; see also HARVARD ELEC. POLICY GRP., FORTY-NINTH PLENARY SESSION, RAPPORTEUR'S SUMMARY 39 (2007), available at www.hks.harvard.edu/hepg/RapporteurReport12-07.pdf.

205. See 1 INDEPENDENT POWER, *supra* note 140, § 2:1; Ferrey, *supra* note 155, at 1889.

206. Cf. FARNSWORTH ET AL. *supra* note 194, at 42–43 (describing the potential impact of leakage barriers on electric system reliability).

207. See Press Release, Peter A. Barden, Indeck Energy Sues State Questioning Legality of Regional Greenhouse Gas Program (Jan. 29, 2009), available at <http://www.indeckenergy.com/pdfnews/RGGI%20Lawsuit%2012909%20.pdf>; Vicki Shiah, *Settlement Reached in Regional Greenhouse Gas Initiative Lawsuit*, SPR ENVTL. L. BLOG (Jan. 14, 2010, 2:28 PM), <http://blog.sprlaw.com/2010/01/settlement-reached-in-regional-greenhouse-gas-initiative-lawsuit/>.

208. Geoffrey Craig & Gail Roberts, *Lawsuit Disputes Legality of New York Participation in RGGI, Citing Lack of Legislative Approval*, ELEC. UTIL. WK., July 4, 2011, at 10.

209. CAL. HEALTH & SAFETY CODE §§ 38500–38599 (West 1996).

210. Assemb. B. 32, Ch. 488, 2006 Leg., Reg. Sess. (Cal. 2006). The bill sets a firm limit on GHG emissions in California by requiring the Air Resources Board to determine California's GHG emission level in 1990 and then issue regulations causing GHG emissions to be reduced to that level by 2020. *Id.*

B. BEYOND ELECTRICITY: CLEAN FUELS

As part of its GHG regulation, California regulated clean fuel, factoring in the determination of the credit value and discrimination regarding out-of-state fuels based on the distance the fuel must travel (using fossil fuels for transportation) to reach California markets, as well as the extent to which coal and other fossil fuels are used to produce electricity.²¹¹ A.B. 32, the California Global Warming Solutions Act of 2006, requires the California Air Resources Board (CARB) to develop a comprehensive plan to reduce GHG emissions in the state to its historic 1990 levels by the year 2020.²¹² As part of this, the purpose of the low carbon fuel standard (LCFS) is “to implement a low carbon fuel standard, which will reduce greenhouse gas emissions by reducing the full fuel-cycle, carbon intensity of the transportation fuel pool used in California”²¹³ It requires providers of gasoline and diesel fuels to calculate the carbon intensity (CI) of each fuel component, report such calculations to CARB, and make reductions in order to meet the carbon intensity standards.²¹⁴ The greater carbon-emission-intensity of electricity produced in the Midwest used to create these cleaner fuels devalued out-of-state cleaner fuels in the California regulation.²¹⁵

A California federal trial court held that a state violates the dormant Commerce Clause if it discriminates against out-

211. *Rocky Mountain Farmers Union v. Goldstone*, 843 F. Supp. 2d 1071, 1080 (E.D. Cal. 2011), *rev'd*, *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

212. CAL. HEALTH & SAFETY CODE §§ 38,500–38,599 (West 2012).

213. CAL. CODE REGS. tit. 17, § 95480 (2013).

214. *Id.*

215. *Rocky Mountain Farmers Union*, 843 F. Supp. 2d at 1086–87. The court reiterated that only the federal government can regulate commerce between the states, and California, attempting to regulate commerce outside its borders, violates exclusive federal authority to regulate interstate commerce. *Id.* at 1094. California gave less value to the identical energy fuel, ethanol, when produced in the Midwest because of the latter region’s use of coal-fired power for electricity used to produce ethanol and other products and the longer transportation distance for trucks to transport ethanol from there to California. *See id.* at 1086–87. While such discrimination did reflect the total embedded energy emissions and transportation costs of different means to produce the energy products and to move them to market from geographically distant production sources, the court held that states cannot elect to discriminate against more distant, out-of-state products. *Id.* at 1088–89.

of-state energy products based on the distance it must travel from out of state and the greater carbon-intensity of electricity used at the source of the production to produce the renewable fuel.²¹⁶ The court reiterated that only the federal government can regulate commerce between the states, and California, in attempting to regulate commerce outside its borders, violated exclusive federal authority to regulate interstate commerce.²¹⁷ The court again distinguished motive from constitutional requirements, holding, “[a]lthough [the state’s] goal to combat global warming may be ‘legitimate,’ . . . it cannot ‘be achieved by the illegitimate means of isolating the State from the national economy.’”²¹⁸

The Ninth Circuit, however, reversed the decision, holding that the regulations were not facially discriminatory, the transportation and electricity source factors used in the regulations were permissible under the general ability of states to act as laboratories for experimentation, and that the regulations did not exceed California’s authority under the dormant Commerce Clause.²¹⁹ The dissenting opinion in the Ninth Circuit decision found there was facial discrimination.²²⁰ Of four federal judges who ruled on this case at the trial and appellate levels, two found it unconstitutional, while two did not.²²¹ At the time of this writing, a motion for rehearing en banc was pending,²²² with a motion for a writ of certiorari to follow next.

216. *Id.* at 1088.

217. *Id.* at 1094.

218. *Id.* at 1088–89 (quoting *City of Philadelphia v. New Jersey*, 437 U.S. 617, 626 (1978)).

219. *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

220. *Id.* at 1108 (Murgia, J., concurring in part, dissenting in part).

221. Judge O’Neill for the Eastern District of California and Judge Murgia for the Ninth Circuit found the regulations unconstitutional, while Judges Gould and Nelson for the Ninth Circuit did not. *Rocky Mountain Farmers Union*, 730 F.3d 1070; *Rocky Mountain Farmers Union*, 843 F. Supp. 2d 1071.

222. See Keith Goldberg, *9th Circuit Urged to Rethink Calif. Carbon Fuel Standard*, LAW360 (Oct. 3, 2013, 5:16 PM), <http://www.law360.com/articles/477847/9th-circ-urged-to-rethink-calif-carbon-fuel-standard>.

C. CLIMATE IS INTERNATIONAL

To the extent unparalleled by any other emissions, climate control is international.²²³ GHGs emitted in any U.S. state, or anywhere in the world, exert similar warming of the planet.²²⁴ There were GHG reduction-funding pledges made by developed countries, including the United States (even though it has not ratified the Kyoto Protocol) over a period of years at the annual Conference of Parties (CoP)²²⁵:

- At CoP-3 forming the 1997 Kyoto Protocol, which now has 192 parties;²²⁶
- At the 2007 Bali Conference of the Parties (CoP-13);²²⁷
- At the 2009 Copenhagen CoP-15;²²⁸

223. See *Kyoto Protocol*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/kyoto_protocol/items/2830.php (last visited Oct. 10, 2013) (“The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change . . .”).

224. See *id.*

225. See *id.*; *Status of Ratification of the Kyoto Protocol*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php (last visited Oct. 10, 2013).

226. See *A Brief History of the UNFCCC and the Kyoto Protocol*, EARTH NEGOTIATIONS BULL. (Int’l Inst. for Sustainable Dev., New York, N.Y.) Dec. 11, 2012, at 2 available at www.iisd.ca/download/pdf/enb12567e.pdf. The so-called Annex 1 countries agreed to reduce GHGs by an average of 5% below country 1990 levels between 2008–2012, with amounts varying by country. *Id.* The Protocol achieved ratification by enough signatories to come into force February 16, 2005. *Kyoto Protocol*, *supra* note 223.

227. *A Brief History of the UNFCCC and the Kyoto Protocol*, *supra* note 226, at 2. CoP is the Conference of the Parties to the Kyoto Protocol, an annual meeting to attempt to implement the goals of the Protocol. See United Nations Framework Convention on Climate Change Conference of the Parties, Bali, Indon., Dec. 3–15, 2007, U.N. Doc. FCCC/CP/2007/6/Add.1, 3 (Mar. 14, 2008), available at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>; Jessica Aldred, *Q&A: Bali Climate Change Conference*, THE GUARDIAN (Dec. 3, 2007, 12:05 PM), <http://www.guardian.co.uk/environment/2007/nov/30/bali.climatechange>; *Deal Agreed in Bali Climate Talks*, THE GUARDIAN (Dec. 15, 2007, 7:33 AM), <http://www.guardian.co.uk/environment/2007/dec/15/bali.climatechange4>.

228. See *COP 16: UN Conference Delegates Debate Source of Climate Change Funds*, HUFFINGTON POST, http://www.huffingtonpost.com/2010/12/08/cop-16-un-conference-dele_n_794094.html (last updated May 25, 2011, 7:15 PM). The Copenhagen Conference of the Parties (CoP-15), which took place in December 2009, was intended to establish an ambitious global climate change agreement for the post-2012 period, when the Kyoto Protocol expires. See *Summary: Copenhagen Climate Summit*, CENTER FOR CLIMATE & ENERGY SOLUTIONS, <http://www.c2es.org/international/negotiations/cop-15/summary>

- At the 2010 Cancún CoP-16 with agreement on the “Cancún Agreements” to try to limit GHG emissions to hold temperature rise to 1.5 degrees Celsius²²⁹ and establishing a new Green Climate Fund and standing committees and a fast-start pledge;²³⁰
- At the 2011 Durban CoP-17, which reached some advance on the Green Climate Fund;²³¹ and
- At the 2012 Doha CoP-18, which needed to adopt a second commitment period.²³²

At the 2012 Doha CoP-18, and at the Copenhagen CoP-15, there was a \$30 billion financing commitment of developed countries to finance developing country GHG emission mitigation and adaption efforts by 2012 and a \$100 billion annual commitment by 2020.²³³

VII. CONCLUSION

The solicitation notice for the conference foursquare set the stage for this conference:

First, we do not have the legal, institutional, or physical infrastructure to transition to cleaner energy sources . . . we do not have effective governance strategies for complex, multi-level problems that predominate at the intersection of environmental and energy law

. . . .
. . . .

Many of our most daunting environmental and energy challenges cross jurisdictional boundaries, involve multiple levels of governance (e.g., local, state, regional, national, international), or both. Natural systems do not respect the artificial territorial and jurisdictional boundaries of governments, whether at the local, state, or national levels With no single institution well-positioned to

(last visited Oct. 26, 2013). The Conference only produced a thirteen-paragraph “political accord,” which was not an official product of the meeting and was only “noted” by the Conference because of lack of a consensus among world nations. *See id.* This comprises the regulatory fabric insulating the world against global warming.

229. *A Brief History of the UNFCCC and the Kyoto Protocol*, *supra* note 226, at 2.

230. *See id.* A Standing Committee was created to attempt to deal with the funding mechanism. *Id.*

231. *See id.*

232. *Id.* at 3. Issues were raised as to whether the commitments in the Bali Action Plan had been met. *Id.*

233. *Id.* at 2.

solve the problem, it may simply fall between the cracks; or it may be addressed partially and inadequately by one or more well-intentioned institutional actors²³⁴

Let me underscore several statements in this preamble to the conference:

- The shortcoming is appropriate legal and regulatory structure, even more than physical infrastructure.
- States have strategies, but they are not effective strategies when they do not mesh with the requirements of the Constitution and the Federal Power Act noted in the First Dimension.
- Power seldom stops at state boundaries. State policies that distinguish between the geographic origin of commerce in power are at risk in the Second Dimension, if challenged.
- Some of the state regulation of power enters the Third Dimension, invoking several constitutional trip-wires.
- When we look at hardware and other fuels, there are still other dimensions.

There is a substantial need for sustainable electric power development. It is the key infrastructure that will determine the future carbon footprint. And the current sustainable energy policy is largely implemented at the state, rather than federal, level of government. Many of these state policies are confronting Supremacy and dormant Commerce Clause constitutional challenges. It is not that we lack energy infrastructure; rather, we lack legally smart implementation of energy infrastructure. It is enough to note that the challenges are several, raise significant legal issues, and are ongoing.

In fairness, constitutional infrastructure and governance are not the only challenges to renewable energy projects. A number of renewable energy projects have been the subject of individual litigation challenge over the past decade, as opposed to challenge to an entire state regulatory program supporting certain incentives for renewable energy. One study tracked sixty challenges to thirty-four projects involving solar, wind, biomass, geothermal, and other areas of renewable energy.²³⁵

234. *Conference Themes*, *supra* note 1.

235. See Janice Schneider & Taiga Takahashi, *A Snapshot of Renewable Energy Project Litigation*, LAW360 (Dec. 6, 2012, 10:23 AM), <http://www.lw.com/thoughtLeadership/snapshot-renewable-energy-project-litigation>.

Roughly half were still in litigation, eight were settled, and eight ended in a court decision.²³⁶ These challenges involved the National Environmental Policy Act and its state analogue statutes, the National Historic Preservation Act, the Endangered Species Act, and various land-use laws.²³⁷ Three of the eighteen completed suits resulted in the projects being cancelled or withdrawn.²³⁸

Regardless of legal challenges, renewable energy is a critical part of the energy future.²³⁹ Renewables are virtually inexhaustible.²⁴⁰ Energy used by humankind on the earth equals only about 0.01% of the total solar energy reaching the earth.²⁴¹ Solar energy provides as much potential energy to the entire globe every seventy minutes as humankind uses in the entirety of each year.²⁴² In fact, no nation on earth uses more energy than the energy content contained in the sunlight that strikes its existing buildings every day.²⁴³ The solar energy that falls on roads in the United States each year contains roughly as much energy content as all the fossil fuel consumed in the world during that same year.²⁴⁴ Wind power's global energy potential is thirty-five times world electricity use.²⁴⁵

Exactly a month before this Minnesota conference, the *Washington Post* carried a story under the caption: "*The Biggest Fight over Renewable Energy is Now in the States.*"²⁴⁶ This statement is an accurate assessment of where the battle is—in five dimensions—in current real time.

236. *Id.*

237. *Id.*

238. *Id.* (including the Makah Bay Wave Energy Project, the Goshen South Wind Project, and the Pahnamid Wind Project).

239. STEVEN FERREY WITH ANIL CABRAAL, RENEWABLE POWER IN DEVELOPING COUNTRIES: WINNING THE WAR ON GLOBAL WARMING 35 (2006) ("Energy is the single most important problem facing humanity today." (quoting Richard Smalley, *Nobel Laureate*, BOSTON GLOBE, Sept. 26, 2002, at 1)).

240. *See id.*

241. *Id.* at 36.

242. AMORY B. LOVINS, IMRAN SHEIKH & ALEX MARKEVICH, ROCKY MOUNTAIN INST., FORGET NUCLEAR 6 (2008), available at http://www.rmi.org/Knowledge-Center/Library/E08-04_ForgetNuclear.

243. FERREY WITH CABRAAL, *supra* note 239, at 36.

244. *Id.*

245. LOVINS, SHEIKH & MARKEVICH, *supra* note 242, at 6.

246. *See* Plumer, *supra* note 61.
